

-continued

Basic compound: N,N'-dicyanohydrazine	1.0 part
Solvent:	

Propylene glycol monomethyl ether acetate 625 parts\*\*

\*\*VP-2500™ commercially available from Nippon Soda, same as that used in the reference example.

\*The solvent amount includes carry-over from the resin solution.

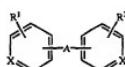
TABLE 2

No.	Effective sensitivity [mJ/cm²]	Resolution [μm]	Profile	Temperature dependency [°m/°C.]
<u>Example</u>				
7	31	0.16	o	8
8	33	0.16	o	15
9	20	0.17	o	15
10	25	0.16	o	9
<u>Comparative Example</u>				
3	6	0.18	x	>50
4	9	0.17	x	>50

The resist composition according to the present invention provides excellent resolution and satisfactory profile, and because of small dependency on post exposure bake temperature, it provides outstanding process stability. The composition is suitable for exposure using deep ultra violet ray, including excimer laser beam, X-rays, electron beam, ion beam and the like, and can improve the resolution and contrast in lithography using above-mentioned light sources. As a result, the resist composition according to the present invention is able to form fine resist patterns at high accuracy.

What is claimed is:

1. A negative type resist composition comprising alkali soluble resin, acid generator, crosslinking agent, and a basic compound represented by the following formula (I)



wherein, A represents bivalent aliphatic hydrocarbon residue which may be optionally interrupted by imino group, sulfide group, or disulfide group, X represents nitrogen atom or  $\text{O}(\text{NH}_2)$ , and R¹ and R² independently represent hydrogen or alkyl provided that when X represents  $\text{O}(\text{NH}_2)$ , A represents sulfide group or disulfide group.

2. The negative type resist composition according to claim 1, wherein the basic compound of the formula (I) is represented by the following formula (Ia):

5



(la)

wherein, A, X, R¹ and R² are the same as defined in claim 10. 1, and the marks "o" and "x", indicate that A is positioned on 3-position, or 4-position on the six-membered rings with respect to X.

3. The negative type resist composition according to claim 1, wherein the basic compound of the formula (I) is represented by the following formula (Ib):

15



(lb)

wherein, A, R¹ and R² are the same as defined in claim 1. 25 4. The negative type resist composition according to claim 3, wherein A is a linear alkyne having 2 to 4 carbon atoms, linear alkenylene having 2 to 4 carbon atoms or iminobis-alkylene having 2 to 6 carbon atoms.

5. The negative type resist composition according to claim 4, wherein the basic compound of formula (Ib) is selected from 1,2-di(4-pyridyl)ethane, 1,3-di(4-pyridyl)propane, 1,2-di(4-pyridyl)ethylene and bis(3-pyridylmethyl)amine.

6. The negative type resist composition according to claim 3, wherein A is a sulfide group or a disulfide group.

7. The negative type resist composition according to claim 6, wherein the basic compound of formula (Ib) is selected from 4,4'-dipyridylsulfide and 4,4'-dipyridyldisulfide.

8. The negative type resist composition according to claim 1, wherein the alkali soluble resin is a polyvinyl phenol-based resin.

9. The negative type resist composition according to claim 1, wherein the acid generator is a sulfonic ester of N-hydroxyimide compound.

10. The negative type resist composition according to claim 1, wherein composition ratio of the basic compound of formula (I) is between 0.02 and 1 wt %, based on the total solid content in the composition.

11. The negative type resist composition according to claim 1, wherein A is a linear alkyne having 2 to 4 carbon atoms or linear alkenylene having 2 to 4 carbon atoms or iminobis-alkylene having 2 to 6 carbon atoms.

12. The negative type resist composition according to claim 1, wherein A is a sulfide group or a disulfide group.

13. The negative type resist composition according to claim 1, wherein A is selected from the group consisting of methylene, ethylene, vinylene, trimethylene, iminobismethylene, sulfide and disulfide.

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